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AMENDMENTS TO THE CLAIMS

1. (Currently amended) An acoustic logging apparatus comprising:

(a) a bottomhole assembly (BHA) conveyed on a drilling tubular in a borehole within an earth formation, said BHA comprising a source array ~~for emitting~~ which emits a preselected acoustic ~~signals~~ signal in the borehole axis direction into the earth formation; and

(b) at least one receiver on the BHA ~~for receiving~~ which receives a second acoustic signal produced by ~~an interaction~~ reflection of said preselected acoustic signals ~~with~~ in said formation.

2. (original) The apparatus of claim 1 wherein said at least one source comprises at least one of i) an axially distributed array of axially directed sources, ii) an azimuthally distributed array of axially directed sources, iii) an axially distributed array of azimuthally directed sources, and iv) an azimuthally distributed array of azimuthally directed sources.

3. (currently amended) The apparatus of claim 2 ~~further comprising activating said~~ wherein the source array is activated according to at least one of: i) pre-selected sequential time delays, ii) pre-selected energy levels and iii) coded activation sequences.

4. (currently amended) The apparatus of claim 1 ~~further comprising at least one~~ wherein the source array ~~for emitting~~ emits said preselected acoustic ~~signals~~ signal ~~which is~~ differing in at least one of i) a spectrum and ii) a wave mode from acoustic energy of a rotating drillstring.

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5. (currently amended) The apparatus of claim 1 ~~further comprising said at least one~~ wherein the source array ~~that~~ emits at least one of: i) a monopole acoustic signal, ii) a dipole acoustic signal, and iii) a quadrupole acoustic signal.

6. (original) The apparatus of claim 1 wherein said at least one receiver is located a distance at least two wavelengths from an element of said source array.

7. (currently amended) The apparatus of claim 6 wherein said at least one receiver comprises a plurality of receivers ~~for receiving said second signal~~ and further comprise at least one of: i) a pressure sensor, and ii) a motion sensor.

8. (currently amended) The apparatus of claim 7 wherein said plurality of receivers ~~for receiving said second signal~~ include a hydrophone, an accelerometer and a geophone.

9. (currently amended) The apparatus of claim 7 wherein said plurality of receivers ~~for receiving said second signal~~ include at least one of i) an accelerometer and ii) a geophone, said receivers adjustably located to contact the earth formation.

10. canceled (original) The apparatus of claim 1 wherein said at least one receiver receives said second signal that has traversed part of said earth formation.

11. (Currently amended) A method of obtaining information about a parameter of interest of an earth formation, the method comprising:

(a) using a drillbit on a bottom hole assembly (BHA) conveyed on a drilling tubular for drilling a borehole in said earth formation;

(b) suspending drilling operations and using said drilling tubular to move said drillbit away from a bottom of the borehole;

(c) generating an acoustic signal in the borehole axis direction into said earth formation using an axially directed acoustic source array on the BHA; and

(d) determining said parameter of interest from a received signal resulting from ~~an interaction~~ a reflection of the generated acoustic signal with the earth formation.

12. (original) The method of claim 11 wherein generating said acoustic signal further comprises sequentially activating elements of said acoustic source array.

13. (original) The method of claim 11 wherein generating said acoustic signal further comprises activating elements of said acoustic source array in the borehole axial direction according to at least one of: i) pre-selected sequential time delays, ii) pre-selected energy levels and iii) coded activation sequences.

14. (original) The method of claim 11 wherein said received signal has traversed part of said earth formation that is adjacent to said borehole.

15. (original) The method of claim 11 wherein determining a parameter of interest further comprises defining a reflector imaging direction that is at least one of: i) parallel to the axis of the borehole, ii) oblique to the axis of the borehole, and iii) perpendicular to the axis of the borehole.

16. (original) The method of claim 11 wherein said generated acoustic signal is differing in at least one of: i) a spectrum of acoustic energy of a rotating drillstring, and ii) a wave mode from acoustic energy of a rotating drillstring.

17. (original) The method of claim 11 wherein said generated acoustic signal is at least one of: i) a monopole acoustic signal, ii) a dipole acoustic signal, and iii) a quadrupole acoustic signal.

18. (Currently amended) A system for determining a property of an earth formation using an acoustic logging tool on a bottomhole assembly (BHA) in a borehole in said earth formation, the system comprising:

(a) at least one source array in said acoustic logging tool ~~for generating~~ which generates a preselected acoustic ~~signals~~ signal along a ~~in the~~ borehole axis direction into said formation, said preselected acoustic signal differing in spectrum and/or wave mode from acoustic energy of a rotating drillstring;

(b) a plurality of receivers on said logging tool ~~for receiving~~ which receive signals indicative of said parameter of interest at a plurality of depths of the BHA; and

(c) ~~acquiring signals at a plurality of depths of said BHA; and~~

(~~d~~) a processor which processes ~~processing~~ said acquired signals to obtain the parameter of interest.

19. (original) The system of claim 18 wherein said signals are acquired when the

BHA is not in contact with the bottom of the borehole.

20. (original) The system of claim 18 wherein said at least one source array comprises at least one of i) an axially distributed array of axially directed sources, ii) an azimuthally distributed array of axially directed sources, iii) an axially distributed array of azimuthally directed sources, and iv) an azimuthally distributed array of azimuthally directed sources.

21. (currently amended) The system of claim 20 ~~further comprising sequentially firing said~~ the at least one source array is activated sequentially ~~in the borehole axial direction~~ according to at least one of: i) pre-selected sequential time delays, ii) pre-selected energy levels and iii) coded activation sequences.

22. (currently amended) The system of claim 18 wherein the processor processes ~~processing~~ said acquired signals by further comprises defining an imaging ahead of the drillbit along the axis of the borehole.

23. (currently amended) The system of claim 18 wherein the processor processes ~~processing~~ said acquired signals by further ~~comprises~~ combining receiver signals from at least one of i) a pressure sensor, and ii) a motion sensor.

24. (currently amended) The system of claim 18 wherein the processor processes ~~processing~~ said acquired signals by further ~~comprises~~ defining time shifts according to a pre-selected imaging direction.

25. (currently amended) The system of claim 18 wherein the processor processes ~~processing~~ said acquired signals by further ~~comprises~~ compressing and transmitting said signals to the surface in substantially real time.

26. (currently amended) The system of claim 18 wherein the processor processes ~~processing~~ said acquired signals by further ~~comprises~~ performing full waveform processing in the BHA.

27. (previously presented) The system of claim 26 wherein information from said full waveform processing in the BHA is used for downhole control of a geosteering system.

28. (original) The system of claim 18 wherein said plurality of receivers for receiving said signals indicative of a parameter of interest include at least one of i) an accelerometer and ii) a geophone, said receivers adjustably located to contact the earth formation.